

REMARKS

This paper is presented in response to the Office Action. By this paper, claims 11, 15, 25 and 34 are amended, and new claims 35 and 36 are added. Claims 1, 2, 12-14, 16, 18-24, and 26-29 were canceled in previous papers. Claims 3-11, 15, 17, 25, and 30-36 are now pending in view of the aforementioned cancellations and additions.

Reconsideration of the application is respectfully requested in view of the aforementioned amendments to the claims and the following remarks. For the convenience and reference of the Examiner, Applicant's remarks are presented in the order in which the corresponding issues were raised in the Office Action.

I. General Considerations

Applicant notes that the remarks, or lack of remarks, set forth herein are not intended to constitute, and should not be construed as an acquiescence, on the part of the Applicant: as to the purported teachings or prior art status of the cited references; as to the characterization of the cited references advanced by the Examiner; or as to any other assertions, allegations or characterizations made by the Examiner at any time in this case. Applicant reserves the right to challenge the purported teaching and prior art status of the cited references at any appropriate time.

II. Objection to Claims 11, 15 and 34

The Examiner has objected to claims 11, 15 and 34 because of various informalities. Applicant submits that in light of amendments to claims 11, 15 and 34 set forth herein, the objection has been overcome and should be withdrawn.

III. Rejection of Claims 11, 17, 33 and 34 under 35 U.S.C. § 103

Applicant respectfully notes at the outset that in order to establish a *prima facie* case of obviousness, it is the burden of the Examiner to demonstrate that three criteria are met: first, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; second, there must be a reasonable expectation of success; and third, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *MPEP* § 2143.

The Examiner has rejected claims 11, 17 and 33 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,907,595 to Sommerer ("*Sommerer*") in view of U.S. Patent No. 4,959,585 to Hoegler et al. ("*Hoegler*"). Applicant respectfully disagrees.

a. claims 11 and 33

In the rejection of claim 11 and 33, the Examiner asserts that *Sommerer* discloses the claimed invention but has conceded that “*Sommerer* does not explicitly disclose the filament as being a helically wound wire whose diameter varies along a longitudinal axis defined by the filament, the variances in diameter being substantially symmetrically arranged with respect to a predetermined location on the longitudinal axis.” The Examiner then goes on to allege that *Hoegler* remedies this shortcoming of *Sommerer*, citing Figures 1a, 1b, 3, and 5, and col. 7, lines 25-50 of *Hoegler* in support.

With respect to the purported motivation for the allegedly obvious combination, the Examiner has alleged that it would have been obvious to modify the “cathode assembly” of *Sommerer* so that it includes the filament of *Hoegler* “...for the purpose of providing a filament that enables physical engagement with an electrical connecting portion while providing support for the filament; as well as controlling irradiation parameters via filament diameter.” *Office Action*, pp. 4-5. Notwithstanding this assertion, the Examiner has failed to assert, much less establish, that the “cathode assembly” of *Sommerer* suffers from such shortcomings as could, or would, be remedied by use of the purported disclosure of *Hoegler*. In the absence of any evidence that the *Sommerer* device is somehow deficient in terms of its ability to provide for physical engagement between a filament and an electrical connecting portion, or that the *Sommerer* device needs, or would benefit from, the control of irradiation parameters purported by the Examiner to be afforded by the *Hoegler* device, Applicant submits that the Examiner has failed to establish the existence of the requisite motivation to make the purportedly obvious combination. It would thus appear that the assertion of the Examiner as to the purported benefits that would be obtained by combining *Sommerer* and *Hoegler* is nothing more than speculation.

Furthermore, it is not apparent that there is a reasonable expectation that the purportedly obvious combination would prove to be successful. In particular, *Hoegler* discloses that it is directed to an electric incandescent lamp. See *Hoegler* Title and Abstract. On the other hand, *Sommerer* is directed to an emitter-cup cathode for high-emission x-ray tubes. See *Sommerer* Title and Abstract. It is not at all clear that the installation of an incandescent lamp filament in a “high-emission x-ray tube” such as the Examiner has suggested would be obvious to do, would prove to be successful. For example, the Examiner has failed to provide any evidence whatsoever that the incandescent lamp filament of *Hoegler* would provide acceptable performance under the extreme conditions that characterize many x-ray tube operating environments. Accordingly, it not apparent that there is any reasonable expectation that purportedly obvious combination advanced by the Examiner would prove to be successful.

In fact, the combination proposed by the Examiner may well operate to impair, if not destroy, the functionality of the *Sommerer* device. Thus, it is not clear why one of skill would be motivated to attempt such a combination.

In view of the foregoing discussion, Applicant respectfully submits that the Examiner has failed to establish a *prima facie* case of obviousness with respect to claim 11, at least because the Examiner has failed to establish the existence of a suggestion or motivation to make the purportedly obvious combination, and because the Examiner has failed to establish that there is any reasonable expectation that the purportedly obvious combination would prove to be successful. Accordingly, Applicant respectfully submits that the rejection of claim 11, as well as the rejection of corresponding dependent claim 33, should be withdrawn.

b. claim 17

In the rejection of claim 17, the Examiner has simply alleged that “the corresponding method [of claim 17] is illustrated in Fig. 1 [of *Sommerer*] above,” and that “the missing structural limitation [apparently referring to the failure of *Sommerer* to disclose a helically wound wire - as discussed at IIIa. above] corresponds to the method step of heating the filament in such a way that portions of the filament are at a relatively higher temperature than other portions of the filament.”

In light of the foregoing, it appears that the Examiner may be asserting that by adding the filament of *Hoegler* to the cathode assembly of *Sommerer*, the claim 17 process of “... heating the filament in such a way that some portions of the filament are at a relatively higher temperature than other portions of the filament ...” is somehow necessarily achieved. That is, inasmuch as the Examiner has completely failed to demonstrate that the process of claim 17 is disclosed in any of the cited references, it appears that the Examiner is taking the view that “... heating the filament in such a way that some portions of the filament are at a relatively higher temperature than other portions of the filament,” as recited in claim 17, is somehow *inherent* in the disclosure, in *Hoegler*, of a “filament 17” that purportedly comprises “...a helically wound wire whose diameter varies along a longitudinal axis defined by the filament, the variances in diameter being substantially symmetrically arranged with respect to a predetermined location on the longitudinal axis...”

Applicant respectfully notes, however, that inherency is not readily established. For example, as noted in MPEP § 2112, the Examiner must provide rationale or evidence showing inherency. In particular, “The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic.” *In re Rijckaert*, 9 F.3d 1531, 1534 28 USPQ 2d 1955, 1957 (Fed. Cir. 1993) (emphasis in original). Moreover, the Court of Appeals for the Federal Circuit has noted that “To establish inherency, the extrinsic evidence ‘must make clear that the missing descriptive matter is necessarily present in the thing described by the reference, and that it would

be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a thing *may* result from a given set of circumstances is *not sufficient*.” *In re Robertson*, 169 F.3d 743, 745, 49 USPQ 2d 1949, 1950-51 (Fed. Cir. 1999) (emphasis added).

Finally, “In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art.” *Ex Parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original).

In view of the foregoing discussion, Applicant respectfully submits that the Examiner has failed to establish a *prima facie* case of obviousness with respect to claim 17, at least because the Examiner has failed to establish that the references, when combined in the purportedly obvious fashion, teach or suggest all the limitations of claim 17. Applicant thus respectfully submits that the rejection of claim 17 should be withdrawn.

c. claim 34

The Examiner has rejected claim 34 under 35 U.S.C. § 103(a) as being unpatentable over *Hoegler* in view of *Sommerer*. Claim 34 depends from claim 25, which, as noted below, has been amended herein. By virtue of its dependence from independent claim 25, dependent claim 34 requires that “...the wire diameter is greater in the middle portion of the helix than in the first or second end portions...”

As discussed at IV. below however, the Examiner has not established that the aforementioned limitation, in combination with the other limitations of the rejected claim, are taught or suggested by *Hoegler* or *Sommerer* or by any other reference(s). Thus, even if the purported disclosure of *Hoegler* is modified by *Sommerer* in the allegedly obvious manner set forth in the Office Action, the resulting combination nonetheless fails to include all the limitations of the rejected claim.

In light of the foregoing, Applicant respectfully submits that the Examiner has failed to establish a *prima facie* case of obviousness with respect to claim 34, at least because the Examiner has not established that the purportedly obvious modification of *Hoegler* results in a combination that teaches or suggests all the limitations of claim 34. Applicant thus respectfully submits that the rejection of claim 34 should be withdrawn.

IV. Rejection of Claim 25 under 35 U.S.C. § 102

Applicant respectfully notes that a claim is anticipated under 35 U.S.C. § 102(a), (b), or (e) only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single

prior art reference. Further, the identical invention must be shown in as complete detail as is contained in the claim. Finally, the elements must be arranged as required by the claim. *MPEP* § 2131.

The Examiner has rejected claim 25 under 35 U.S.C. § 102(b) as being anticipated by *Hoegler*. Applicant respectfully submits that for at least the reasons set forth below, the rejection is moot and should accordingly be withdrawn

By this paper, Applicant has amended independent claim 25 to clarify that the group of properties recited therein includes wire diameter, “wire” pitch, and “coil” diameter. Applicant has also amended independent claim 25 to recite that the wire diameter is “greater” in the middle portion of the helix “than in the first or second end portions.” Support for the aforementioned amendment to claim 25 can be found, for example, at least at Figure 7B of the application.

In contrast, the Examiner has not established that *Hoegler*, either alone or in combination with any other reference, teaches or suggests the aforementioned limitations in combination with the other limitations of claim 25.

In light of the foregoing, Applicant respectfully submits that the Examiner has not established that *Hoegler* anticipates claim 25, at least because the Examiner has not established that each and every element as set forth in claim 25 is found in *Hoegler*, because the Examiner has not established that the identical invention is shown in *Hoegler* in as complete detail as is contained in amended claim 25, and because the Examiner has not shown that *Hoegler* discloses the elements of claim 25 arranged as required by that claim.

Applicant thus respectfully submits that the rejection of claim 25 should be withdrawn.

V. Allowable Subject Matter

Applicant acknowledges with thanks the indication of the Examiner that claims 3-10 and 30-32 are allowed, and Applicant also wishes to thank the Examiner for the careful review of those claims. The Examiner has also indicated that claim 15 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. In light of the discussion and claim amendments presented herein, Applicant respectfully declines to rewrite claim 15 in independent form at this time.

Applicant submits the following comments concerning the Examiner’s statements of reasons for the indication of allowable subject matter in the Office Action. In general, Applicant agrees with the Examiner that the inventions to which claims 3-10, 15 and 30-32 are respectively directed are patentable over the cited references, but respectfully disagrees with the Examiner’s statement of reasons for allowance as set forth in the Office Action.

Particularly, Applicant submits that it is improper to characterize a single limitation, or subset of limitations, as constituting the basis for allowance of a claim. Rather, the patentability of a claim is properly determined with reference to the claim as a whole. Accordingly, Applicant does not concede that the reasons for allowable subject matter given by the Examiner are the only reasons that make, or would make, the claim allowable and Applicant does not make any admission or concession concerning the Examiner's statements in the Office Action concerning the allowability of claims 3-10, 15 and 30-32 in view of the cited references.

VI. New Claims 35 and 36

By this paper, Applicant has added new dependent claims 35 and 36, which depend from claim 34. Support for the new claims can be found, for example, at least at prior claim 34. New claims 35 and 36 are believed to be in allowable condition for at least the reasons set forth herein.

CONCLUSION

In view of the remarks submitted herein, Applicant respectfully submits that each of the pending claims 3-11, 15, 17, 25, and 30-36 in this application is in condition for allowance. Therefore, reconsideration of the rejections is requested and allowance of those claims is respectfully solicited. In the event that the Examiner finds any remaining impediment to a prompt allowance of this application that could be clarified in a telephonic interview, the Examiner is respectfully requested to initiate the same with the undersigned attorney.

Dated this 16th day of November, 2006.

Respectfully submitted,

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